

AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows:

1. (Currently amended): A method for electrosurgically sealing tissue, comprising the steps of:

applying a first pulse of RF energy to the tissue having a duration of less than about 200 milliseconds to limit excessively heating tissue; [[and]]

measuring a value of an electrical characteristic of tissue in response to the first pulse of RF energy; and

applying at least one subsequent RF energy pulse to the tissue based on the value of an electrical characteristic of tissue and ~~keeping constant or varying~~ regulating RF energy parameters of individual pulses of subsequent RF energy pulses in accordance with at least one characteristic of an electrical transient that occurs during at least one subsequent RF energy pulse.

2. (Currently amended): A method as in claim 1, wherein the ~~step of applying the first pulse includes a step of selecting characteristics~~ pulse duration of the first pulse ~~so as not to excessively heat the tissue~~ is about 100 milliseconds.

3. (Currently amended): A method as in claim 1, wherein the step of applying the first pulse comprises the steps of:

continuously measuring at least one characteristic of a response of the tissue to the applied first pulse; and

in accordance with the measured characteristic, determining whether to change at least one characteristic of the first pulse of RF energy. ~~a set of RF energy parameters to a default set of RF energy parameters.~~

4. (Currently amended): A method as in claim 3, wherein the at least one characteristic is at least one ~~default set of~~ RF energy parameter[[s]] includes parameters selected from the group consisting of a magnitude of a starting power, a magnitude of a starting voltage, a magnitude of a starting current, and pulse width.

5. (Previously amended): A method as in claim 1, wherein said at least one characteristic of an electrical transient is selected from the group consisting of an electric current transient and tissue impedance.

6. (Previously amended): A method as in claim 1, wherein said at least one characteristic of an electrical transient is selected from the group consisting of a rate of change of an electric current transient, a rate of change of the tissue impedance, and phase rotation of voltage and current.

7. (Currently amended): A method as in claim 1, wherein ~~[[said]]~~ at least one of the RF energy parameters ~~characteristic~~ is selected from the group consisting of a current value, a voltage value, a current phase angle, and a tissue impedance value.

8. (Currently amended): A method as in claim 1, wherein the RF energy parameters that are varied for individual pulses of the ~~first and the at least one~~ subsequent RF energy pulses are selected from the group consisting of RF power output, current, voltage, pulse width and duty cycle.

9. (Currently amended): A method as in claim 1, further comprising the step of determining if ~~[[the]]~~ tissue responded to the first pulse of RF energy prior to the step of applying at least one subsequent RF energy pulse.

10. (Previously presented): A method as in claim 9, wherein the step of applying at least one subsequent RF energy pulse includes the step of varying at least one of RF starting power, a magnitude of starting current, pulse width, and a magnitude of starting voltage for the at least one subsequent RF energy pulse.

11. (Previously presented): A method as in claim 1, further comprising the steps of:

measuring the at least one characteristic of the electrical transient that occurs at the end of at least the first pulse and the at least one subsequent RF energy pulse;

in accordance with the measured characteristic, determining whether to terminate the method for electrosurgically sealing tissue, or using the measured characteristic to determine a set of RF energy parameters for a subsequent RF energy pulse and repeating the applying step.

12. (Previously presented): A method as in claim 11, wherein the set of RF energy parameters for the subsequent RF energy pulse comprise a magnitude of a starting RF power, a magnitude of a starting current, a magnitude of a starting pulse width, a magnitude of a starting voltage, and a duty cycle.

13. (Previously presented): A method as in claim 11, wherein the electrical transient is an electrical impedance of the tissue.

14. (Currently amended): A method as in claim 13, wherein the step of using the measured characteristic to determine the set of RF energy parameters for the ~~at least one subsequent~~ a subsequent RF energy pulse comprises the ~~the~~ [[a]] step of using the measured impedance value to readout ~~the set of~~ at least two or more RF energy parameters from an entry in one of a plurality of lookup tables.

15. (Previously presented): A method as in claim 14, wherein said one of the plurality of lookup tables is selected manually or automatically, based on a choice of an electrosurgical tool or instrument.

16. (Previously presented): A method as in claim 3, further comprising the step of modifying predetermined parameters of the set of RF energy parameters in accordance with a control input from an operator.

17. (Previously presented): A method as in claim 1, further comprising the step of combining an RF energy pulse with the at least one subsequent RF energy pulse.

18. (Previously presented): A method as in claim 1, further comprising the step of terminating a generation of the at least one subsequent RF energy pulse upon a determination that the electrical transient is absent.

Claim 19 through 27 (Canceled).

28. (Currently amended): A system for electrosurgically sealing tissue comprising:

means for applying a first pulse of RF energy with a pulse duration of less than about 200 milliseconds to the tissue wherein the characteristics of the first pulse are selected as to not excessively heat the tissue; and

means for applying at least one subsequent RF energy pulse to the tissue and keeping constant or varying RF energy parameters of individual pulses in accordance with at least one characteristic of an electrical transient that occurs during RF energy pulse.

29. (Currently amended): A system as in claim 28, wherein the ~~means for applying the first pulse includes means for selecting characteristics~~ pulse duration of the first pulse so as not to excessively heat the tissue is about 100 milliseconds.

30. (Previously presented): A system as in claim 28, wherein the means for applying the first pulse comprises:

means for continuously measuring at least one characteristic of a response of the tissue to the applied first pulse; and

means for determining whether to change a set of RF energy parameters, in accordance with the measured characteristic.

31. (Previously presented): A system as in claim 30, wherein the default set of RF energy parameters includes parameters selected from the group consisting of a magnitude of a starting power, a magnitude of a starting voltage, a magnitude of a starting current, and pulse width.

32. (Previously presented): A system as in claim 28, wherein the electrical transient is selected from the group consisting of an electric current transient and tissue impedance.

33. (Previously presented): A system as in claim 28, wherein the at least one characteristic of the electrical transient is selected from the group consisting of

a rate of change of an electric current transient, a rate of change of the tissue impedance, and phase rotation of voltage and current.

34. (Previously presented): A system as in claim 28, wherein the at least one characteristic is selected from the group consisting of a current value, a voltage value, a current phase angle, and a tissue impedance value.

35. (Previously presented): A system as in claim 28, wherein the RF energy parameters that are varied for individual pulses of the RF energy pulses are selected from the group consisting of RF power output, current, voltage, pulse width and duty cycle.

36. (Previously presented): A system as in claim 28, further comprising means for determining if the tissue responded to the first pulse of RF energy prior to activating the means for applying at least one subsequent RF energy pulse.

37. (Previously presented): A system as in claim 36, wherein the means for applying at least one subsequent RF energy pulse includes means for varying at least one of RF starting power, a magnitude of starting current, pulse width, and a magnitude of starting voltage for the at least one subsequent RF energy pulse.

38. (Previously presented): A system as in claim 28, further comprising:

means for measuring the at least one characteristic of the electrical transient that occurs at the end of the first pulse and subsequent RF energy pulses;

means for determining whether to terminate the system for electrosurgically sealing tissue, in accordance with the measured characteristic; and

means for using the measured characteristic to determine a set of RF energy parameters for a subsequent RF energy pulse if the means for determining determines not to terminate the system for electrosurgically sealing tissue.

39. (Previously presented): A system as in claim 38, wherein the set of RF energy parameters for the subsequent RF energy pulse comprise a magnitude of a starting RF power, a magnitude of a starting current, a magnitude of a starting pulse width, a magnitude of a starting voltage, and a duty cycle.

40. (Previously presented): A system as in claim 38, wherein the electrical transient is an electrical impedance of the tissue.

41. (Previously presented): A system as in claim 40, wherein the means for using the measured characteristic to determine the set of RF energy parameters for ~~the subsequent~~ a subsequent RF energy pulse comprises means for using the measured impedance value to readout ~~the set of~~ at least two or more RF energy parameters from an entry in one of a plurality of lookup tables.

42. (Previously presented): A system as in claim 41, wherein said one

of the plurality of lookup tables is selected manually or automatically, based on a choice of an electrosurgical tool or instrument.

43. (Previously presented): A system as in claim 30, further comprising means for modifying predetermined parameters of the set of RF energy parameters in accordance with a control input from an operator.

44. (Previously presented): A system as in claim 28, further comprising means for combining an RF energy pulse with at least one subsequent RF energy pulse.

45. (Previously presented): A system as in claim 28, further comprising means for terminating a generation of subsequent RF energy pulses upon a determination that the electrical transient is absent.

46. (Currently amended): A method for electrosurgically sealing tissue, comprising the steps of:

applying a first pulse of RF energy to the tissue; and

applying at least one subsequent RF energy pulse to the tissue and keeping constant or varying RF energy parameters of individual pulses of subsequent RF energy pulses in accordance with at least one characteristic of an electrical transient that occurs during at least one RF energy pulse, wherein one of the at least one characteristic includes the duration ~~that controls the variation of the pulse parameters is~~

~~a width of the electrical transient, the width occurring at an initial state of each subsequent RF energy pulse.~~

47. (New) A method for electrosurgically sealing tissue comprising the steps of:

providing an electrosurgical generator including an RF energy source and a controller that controls the operation of the electrosurgical generator, the electrosurgical generator having an output which couples to at least one electrode of a surgical instrument;

instructing the controller to activate the electrosurgical generator to generate an initial pulse of RF energy to tissue to measure a value of an electrical characteristic of the tissue in response to the applied initial pulse;

determining an initial set of pulse parameters for at least one subsequent pulse based on the initial pulse of RF energy to tissue; and

controlling the pulse parameters of individual pulses of further subsequent RF energy pulses in accordance with a change in the electrical characteristics of the tissue as determined from at least one characteristic of an electrical transient that occurs during at least one RF energy pulse.

48. (New): A method as in claim 14, wherein the RF parameters in one of the plurality of lookup tables includes power, start voltage, voltage decay and dwell time.